

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 August 2004 (19.08.2004)

PCT

(10) International Publication Number
WO 2004/071084 A1

- (51) International Patent Classification⁷: **H04N 7/08**, 7/16, 7/173
- (21) International Application Number: PCT/IB2004/050040
- (22) International Filing Date: 20 January 2004 (20.01.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
03100231.4 5 February 2003 (05.02.2003) EP
- (71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **THISSEN, Rogier**, L., J., W. [NL/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **MUSSCHEBROECK, Rudy** [BE/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **PETRUCCI, Sebastien** [FR/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **PEETERS, Johan** [BE/BE]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (74) Agent: **UITTENBOGAARD, Frank**; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: METHOD OF CODING AND TRANSMITTING EPG DATA, CODER AND RECEIVER

(57) Abstract: EPG data regarding programs and their scheduled times are structured and/or transmitted in such a way that program and schedule records are interleaved. This scheme allows better handling by receiving devices such as embedded devices (i.e. LCD remote controls), because a more efficient reception and storage of transmitted data is possible. In particular, the receiving device can read, parse and store the downloaded EPG data on the fly as it is being received (it can start reading, parsing and storing before the complete reception of data is finished). At any time when the device would have to stop storing EPG data into persistent storage, (almost) all of the data that was stored can actually be used.

METHOD OF CODING AND TRANSMITTING EPG DATA, CODER AND RECEIVER

The present invention relates to a method of coding and/or transmitting EPG (electronic program guides) data documents comprising program and schedule records. The invention also relates to a coder for coding EPG (electronic program guide) data comprising program and schedule records and to a device comprising a receiver for receiving transmitted
5 coded EPG (electronic program guide) data comprising a decoder for decoding coded EPG (electronic program guide) data comprising program and schedule records.

It is known to transmit information and listings of program information by
10 means of so-called electronic program guides (EPG), which are based on the transmission of a large database of program information. Conventionally, the EPG data produced by e.g. a server regarding programs and their scheduled times is structured into sections. The EPG data is transmitted to a receiving device such as e.g. a remote control device.

Embedded and/or restricted devices need to download large sets of (E)PG data
15 from some server (via Internet, cable, GSM, or any other network). Since devices have limited computing and storage, it can be difficult to store all (E)PG data in a memory.

It is possible to separate the TV listing data in 1) programs and 2) schedules for that program. This separation makes it possible that a program that is rerun several times has only one program record with multiple schedule records.

20 For example, the show with the title 'Business news' and description 'an update on today's business worldwide', will be rerun at 9PM, 10PM, and 11 PM. In that case, there will be one record that contains the *program* information (program ID, title, description, comments, ...), i.e.:

25 ('P3992', 'Business news', 'an update on today's business worldwide',)

Three schedule records will refer to this program. The first schedule will contain the

(schedule ID, reference to program ID, start time, end time, indication of time shift, ...), i.e.:

5 ('S005', 'P3992', '9PM', '9:30PM', 'live',....),
 ('S006', 'P3992', '10PM', '10:30PM', 'rerun',....)
 ('S007', 'P3992', '11PM', '11:30PM', 'rerun',....)

10 This known approach saves a lot of space as compared to joining both the program and schedule data into one record. Without joining, also the program info (title, description, ...) would be repeated three times.

Examples of such a data coding scheme are e.g. known from US patents 6,263,501 and 5,652,613.

15 Although this scheme is efficient, problems may arise when a large set of EPG data is transmitted (downloaded) on a device having a relatively small memory or when the transmission is interrupted. In such cases, the present coding schemes for EPG data to be transmitted lead to a loss of useful information of stored data.

20 It is the object of the invention to disclose a method, coder and device of the type described in the opening paragraph, allowing an increase of directly useful information, i.e. a reduction of loss of useful information.

To this end a method, coder and device of the type in accordance with the invention are characterized in that the program and schedule record of the EPG data are coded and/or transmitted and received in an order in which program records and schedule records for programs are interleaved. Interleaved means that each program record is followed or preceded by the corresponding schedule records before or after a subsequent program record is coded and/or transmitted. Thus, the program (p) and schedule records (s) are sorted as follows

30{p1,s11,s12,...s1i},{ p2,s21,s22,...s2i}, {p3,s31,s32,s3i,...}, etc.

(preferably) or

alternatively

$$\{s_{11}, s_{12}, \dots, s_{1i}, p_1\}, \{s_{21}, s_{22}, \dots, s_{2i}, p_2\}, s_{31}, s_{32}, \dots, s_{3i}, p_3\}$$

wherein p1, p2, p3, etc. are program records and s11,s12,..sli are schedule records

5 corresponding to program record p1 and s21, s22,...s2i are schedule records corresponding to p2, etc.

The inventors have realized that data are transmitted as follows in the known transmission schemes:

The data is divided into separate sections comprising .

10

a section with a list of program records

short

('P3992', 'Business news', 'an update on today's business worldwide',...) p1

p1

('P3993', 'Matlock', 'the world's best lawyer in action', p2

p2

15

('P3995', ' ', ' ', ' ', ...)

p3

(‘P3996’, ‘‘, ‘‘, ‘‘,.....), P4

P4

a section with a list of schedule records

20

('S005', 'P3992', '9PMI', '9:30PM', 'live',...) s11

s1:

('S006', 'P3992', '10PM', '10:30PM', 'rerun', ...) s12

s12

(‘S007’, ‘P3992’, ‘11PM’, ‘11:30PM’, ‘rerun’, ...) s13

s13

('S008', 'P3993', '11:30PM', '12:30PM', 'series', ...) s21

s2.

('S009', 'P3995', ' ', ' ', ' ',)

s31

s3:

25

+ possible further sections

The indication p1, p2, s11, s12 etc to the right-hand side is shown here for identification purposes as a guide to the eye, but do not form part of the records.

30 In itself, this coding and transmission scheme offers a very efficient manner of coding, transmitting and organizing the data in many circumstances.

If the total transmitted data does not overload the memory of the device and the transmission is uninterrupted, no real problems occur. However, the problem is that, since the memory is limited, the device may not have enough persistent storage to store all records

in the memory. It would have to stop storing downloaded EPG data in the memory when it is full or when a certain limit has been reached. If the transmission is interrupted, the same phenomenon would occur.

5 In such circumstances the result might be that, whereas all program records are stored, only a few schedule records have been stored. In that case, the receiving device can only use a percentage of the information on TV programs that has been received, because the crucial corresponding schedule records are missing for at least some program records! In fact, the program records that have been stored but for which the schedule records are missing take up valuable memory space.

10 The same phenomenon occurs when the programs records are first transmitted, in which case the crucial corresponding program records are missing for at least some schedule records.

A related phenomenon occurs when the transmission is interrupted during transmission of the EPG data. In such cases, the problem is not a too small memory, but the interruption of transmission of data.

15 Stored information is only truly useful when it is complete. In such circumstances, much of the information received is thus incomplete and, consequently, not truly useful.

20 The efficiency of the data transmission in a data coding method, a coder and device in accordance with the invention is increased because the device can read, parse and store the downloaded EPG data on the fly as it is being received (it can start reading, parsing and storing before the complete reception of data is finished). At any time when the device would have to stop storing EPG data (whether due to a lack of available memory or an unforeseen interruption of transmission) into persistent storage, almost all of the data (except for possibly the very last) that was stored can actually be used.

25 Preferably, the interleaved program and schedule records are sorted on a time basis.

If sorted on time, all data up to a certain time is known to be complete. Gaps in the data are avoided.

30 It is noted that the total EPG document may have other additional information sections such as a section with detailed information on the content of programs. Preferably, these additional information sections are sorted and/or transmitted after a section with interleaved and sorted program records. The additional information is often background information which is of less importance than the combination of program and schedule

records. Such information, although useful, does affect the usefulness of the coded data much less than the interleaved program and schedule records. By coding the interleaved program and schedule codes in a section coded prior (i.e. in front of and transmitted prior to the rest) to other sections comprising information on programs, the most important information is transmitted first. The section comprising the interleaved program and schedule records may be preceded in the coding scheme by short codes with general information, e.g. for identifying the EPG data as such or identifying the section as such.

Preferably, the coding scheme is such that schedule records only refer to program records that are placed above them (not below them) in the scheme

10

.....{p1,s11,s12,...s1i},{ p2,s21,s22,...s2i}, {p3,s31,s32,s3i,...}.

In comparison with the alternative scheme,

15

{s11,s12,...s1i,p1},{s21,s22,...s2i,p2},{s31,s32,...s3i,p3}

this scheme offers the advantage that all received information can be identified and allocated and this is useful, whereas in the alternative scheme the last received information part (because of missing the program record) might not be useful.

20

The EPG document (the section related to the program & schedule info) always starts with a program record: *progress 1*.(p1) The first schedule record: *shedder 1* comes directly thereafter. This schedule record will refer to the progress 1 just before it (p1) and thus could be named s11. This scheme is repeated for all programs, and sorted on the basis of date/time of the schedule records. Only in the case where a program record is a rerun, i.e. would be double, the program record is omitted. The following schedule record will refer to a program record somewhat above it. In this case, two (or more) schedule records follow each other, which could be named s11 and s12, etc.

25

section with a list of interleaved and sorted program records and schedule records

30

.....		
('P3991',	'News', 'the news', ..)	p0
('S005',	'P3991', '8PM', '9PM', 'live',)	s01
('P3992',	'Business news', 'an update on today's business worldwide', ...)	p1

	('S001',	'P3992', '9PM', '9:30PM',	'live',)	s11
	('S001',	'P3992', 110PM, '10:30PM',	'rerun',)	s12
	('S001',	'P3992', 111PM, '11:3-PM',	'rerun',)	s13
	('P3993',	'Matlock', 'the world's best lawyer in action',		p2
5	('S008',	'P3993', '11:30PM', '12:30PM', 'series',		s21
	('P39961 ,	'... ' , ' ... ' , ...)		p3
	('S009',	'P3996' , ' ' , ' ' , ' ... ' ,		s31
	('P4723',	' ... ' , ' ... ' ,		p4
	('S049',	'P4723' , ' ' , ' ' , ' ... ' ,		s41

10

A possible implementation could consist of:

1. A screen-based remote control (RC) device, used to control the display device and display the EPG content;
2. An internet-access device, used for downloading EPG content onto the control
- 15 (RC) device;
3. An Internet server, from which EPG content in the form of EPG documents can be retrieved;

Operations are e.g.:

1. On a regular basis, depending on Internet access bandwidth and remote control
- 20 device memory constraints, the RC requests EPG content from the server. Alternatively, the server may push an EPG document, i.e. send it even without an implicit request.
2. In response to such a request, the server prepares an EPG document coded in accordance with the ordering, sorting and program/schedule interleaving rules in this invention or it may push it. For instance, the EPG data is encoded into an XML format. It is
- 25 to be noted that the server may comprise a document which is already encoded in the manner in accordance with the invention, in which case "preparation" is simply taken for the document that has already been properly encoded or, alternatively, if such a document is not directly available, the server prepares such an EPG document by retrieving information from other documents and by coding the information in the manner in accordance with the
- 30 invention. To this end, the server comprises, has access to or is linked with a coder for coding an EPG document in accordance with the invention.
3. The server will start sending the (partially) prepared EPG document to the RC.
4. On the fly, the EPG document is received, parsed and stored in persistent storage on the RC. To this end, the RC device (or any other device for receiving the EPG

data) comprises a receiver and a decoder for decoding the EPG data document coded in accordance with the invention.

5. When finished, or when the storage on the receiving device exceeds a certain limit, the data is still received, but cannot be stored in the memory anymore. Optionally, the connection can be ended.

6. The device is certain that all stored data can be optimally used, also when not all data could have been stored. This is the great advantage of using interleaved program and schedule records, in comparison with the known method of coding and transmitting the data in separate program and schedule code sections.

10 Access to this Internet site or sites by the remote control device is provided through e.g. an Internet-connected device. This may be a PC, STB or dedicated Internet-connection device like a modem.

The invention can be used e.g. in TV receivers and VCRs or multi-media PCs equipped with a video/delete capture card.

15 An example of an implementation of XML encoded EPG data is given below.

```
<program id="392033">
  <title>Matlock</title>
</program>
<schedule program="392033" channel="10" starttime="12:30:00"
20 endtime="12:45:00" />
<program id="49332">
  <title>Jett Jackson</title>
  <description>Great episode of Jett Jackson.</description>
</program>
25 <schedule program="49332" channel="21" starttime="20:50:00"
  endtime="21:15:00" />
<program id="03992">
  <title>The X-Files</title>
  <description>Mulder encounters ET.</description>
30 </program>
<schedule program="03992" channel="32" starttime="21:00:00"
  endtime="22:00:00" />
<schedule program="03992" channel="21" starttime="22:30:00"
  endtime="22:30:00"/>
```



```

    <program id="69782">
      <title>News</title>
      <description>The daily news.</description>
    </program>
5    <schedule program="69782" channel="31" starttime="09:00:00"
      endtime="10:00:00" />

```

Table 1: Implementation example of an excerpt of XML encoded EPG data

10 Within the concept of the invention, a “means for coding”, “coder”, “means for decoding”, “decoder”, etc. is to be broadly understood and to comprise e.g. any piece of hard-ware (such as a coder or decoder), any circuit or sub-circuit designed to perform a conversion, imposition, rendition as described, as well as any piece of software (computer program or sub-program or set of computer programs, or program code(s)) designed or
 15 programmed to perform a coding or decoding operation in accordance with the invention, as well as any combination of pieces of hardware and software acting as such, alone or in combination, without being restricted to the examples of embodiments given below.

 The invention is also embodied in a device (such as a server) comprising a coder for coding EPG (electronic program guide) data comprising program and schedule
 20 records in accordance with the method of the invention, in its broadest scope as well as in any one of the preferred embodiments described above.

 The invention is also embodied in a receiving device (RC) comprising a decoder for decoding EPG (electronic program guide) data comprising program and schedule
 25 records in accordance with the method of the invention, in its broadest scope as well as in any one of the preferred embodiments described above.

 The invention is also embodied in any computer program comprising program code means for performing a method in accordance with the invention when said program is run on a computer, as well as in any computer program product comprising program code means stored on a computer-readable medium for performing a method in accordance with
 30 the invention, when said program is run on a computer.

 It will be appreciated by persons skilled in the art that the present invention is not limited by what has been particularly shown and described hereinabove. The invention resides in each and every novel characteristic feature and each and every combination of characteristic features. Reference numerals in the claims do not limit their protective scope.

Use of the verb "to comprise" and its conjugations does not exclude the presence of elements other than those stated in the claims. Use of the article "a" or "an" preceding an element does not exclude the presence of a plurality of such elements.

5 The present invention has been described in terms of specific embodiments, which are illustrative of the invention and should not be construed as limiting. The invention may be implemented in hardware, firmware or software, or in a combination of them. Other embodiments are within the scope of the following claims.

In summary, the invention may be described as follows:

10 EPG data regarding programs and their scheduled times are structured and/or transmitted in such a way that *program and schedule records* are interleaved. This scheme allows better handling by receiving devices such as embedded devices (i.e. LCD remote controls), because a more efficient reception and storage of transmitted data is possible. In particular, the receiving device can read, parse and store the downloaded EPG data *on the fly* as it is being received (it can start reading, parsing and storing before the complete reception of data is finished). At any time when the device would have to stop storing EPG data into
15 persistent storage, (almost) all of the data that was stored can actually be used. The invention is embodied in a method, but may equally be embodied in a coder or a decoder or a device comprising a coder or a decoder.

CLAIMS:

1. A method of coding and/or transmitting EPG (electronic program guides) data documents comprising program and schedule records, characterized in that the program (p1, p2, p3) and schedule records (s11, s12, ... s1i, s21, s22, ..., s2i, s31, s32, ..., s3i) of the EPG data are coded and/or transmitted in an order in which program records and schedule records
5 for programs are interleaved stored and/or transmitted
((p1, s11, s12, ..., s1i), {p2, s21, s22, ..., s2i}, {p3, s31, s32, s3i, ...}),
{s11, s12, ..., s1i, p1}, {s21, s22, ..., s2i, p2}, {s31, s32, ..., s3i, p3})).
2. A method as claimed in claim 1, characterized in that the interleaved program
10 and schedule records are sorted on a time basis.
3. A method as claimed in claim 1, characterized in that schedule records only refer to program records that are ahead in the coding scheme
(p1, s11, s12, ..., s1i), {p2, s21, s22, ..., s2i}, {p3, s31, s32, s3i, ...}).
15
4. A method as claimed in claim 1, characterized in that the interleaved program and schedule records are coded in a section which is separate and ahead in the coding scheme from other sections comprising information relating to programs.
- 20 5. A method as claimed in claim 4, characterized in that the section comprising interleaved program and schedule records is preceded by a section comprising general information.
- 25 6. A device comprising an encoder for coding EPG (electronic program guide) data comprising program and schedule records in accordance with the method as claimed in any one of the claims 1 to 5.

7. A receiving device (RC) comprising a decoder for decoding EPG (electronic program guide) data comprising program and schedule records which are coded in accordance with the method as claimed in any one of claims 1 to 5.
- 5 8. A computer program comprising program code means for performing a method in accordance with the invention when said program is run on a computer, as well as in any computer program product comprising program code means stored on a computer-readable medium for performing a method as claimed in any one of claims 1 to 5, when said program is run on a computer.

INTERNATIONAL SEARCH REPORT

International Application No

CT/IB2004/050040

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04N7/08 H04N7/16 H04N7/173		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04N		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, PAJ, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/129366 A1 (SCHEIN STEVEN MICHAEL ET AL) 12 September 2002 (2002-09-12) page 4, paragraph 75 -page 5, paragraph 82 page 7, paragraph 124 - paragraph 125 figures 4,5,16,17 ---	1-8
Y	US 5 867 207 A (BRIDGEWATER KEVIN ELLIOTT ET AL) 2 February 1999 (1999-02-02) column 4, line 26 -column 5, line 43; figures 1,2 ---	1-8
A	US 6 057 886 A (VAN GESTEL HENRICUS A W) 2 May 2000 (2000-05-02) column 1, line 56 -column 2, line 24 column 3, line 32 -column 4, line 4 figures 1,3 --- -/--	1-8
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents : *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *Z* document member of the same patent family		
Date of the actual completion of the international search 11 June 2004		Date of mailing of the international search report 29/06/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Kuhn, P

INTERNATIONAL SEARCH REPORT

International Application No
 BT/IB2004/050040

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 107 600 A (SONY SERVICE CT EUROP N V) 13 June 2001 (2001-06-13) column 2, paragraph 6 - paragraph 9 column 5, paragraph 21 -column 6, paragraph 28 figures 2-5 ---	1-8
A	US 5 594 509 A (COREY GLENN ET AL) 14 January 1997 (1997-01-14) column 10, line 59 -column 11, line 28 figure 3B ---	1-8
P,A	EP 1 365 588 A (THOMSON LICENSING SA) 26 November 2003 (2003-11-26) column 4, paragraph 14 -column 5, paragraph 20 figure 1 ---	1-8
A	US 6 263 501 B1 (BROUGHTON SUSAN ET AL) 17 July 2001 (2001-07-17) cited in the application column 9, line 12 -column 10, line 67 figures 4-9 ---	1-8
A	US 5 652 613 A (LAZARUS DAVID BERYL ET AL) 29 July 1997 (1997-07-29) cited in the application column 3, line 45 -column 7, line 27 figure 2 -----	1-8

INTERNATIONAL SEARCH REPORT

Information on patent family members

National Application No

T/IB2004/050040

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002129366 A1	12-09-2002	US 6412110 B1	25-06-2002
		US 6151059 A	21-11-2000
		AU 3908297 A	25-02-1998
		WO 9806219 A1	12-02-1998
		CA 2260894 A1	12-02-1998
		CN 1240554 A ,B	05-01-2000
		EP 0919097 A1	02-06-1999
		JP 2000500639 T	18-01-2000
		JP 3174349 B2	11-06-2001
US 5867207 A	02-02-1999	US 6064378 A	16-05-2000
		AU 695654 B2	20-08-1998
		AU 1521795 A	01-08-1995
		AU 680340 B2	24-07-1997
		AU 1598195 A	01-08-1995
		AU 691209 B2	14-05-1998
		AU 8157294 A	13-07-1995
		BR 9500013 A	26-09-1995
		BR 9506446 A	02-09-1997
		BR 9506447 A	02-09-1997
		CA 2138603 A1	06-07-1995
		CA 2180111 A1	13-07-1995
		CA 2180112 A1	13-07-1995
		CN 1318942 A	24-10-2001
		CN 1115950 A ,B	31-01-1996
		CN 1141707 A ,B	29-01-1997
		CN 1141708 A ,B	29-01-1997
		DE 69422791 D1	02-03-2000
		DE 69422791 T2	29-06-2000
		DE 69508553 D1	29-04-1999
		DE 69508553 T2	15-07-1999
		DE 69512023 D1	14-10-1999
		DE 69512023 T2	27-01-2000
		DE 69527443 D1	22-08-2002
		DE 69527443 T2	20-03-2003
		EP 1146744 A2	17-10-2001
		EP 1126719 A2	22-08-2001
		EP 0662771 A1	12-07-1995
		EP 0738449 A1	23-10-1996
		EP 0738450 A1	23-10-1996
		EP 0838958 A1	29-04-1998
		ES 2141205 T3	16-03-2000
		FI 962756 A	30-07-1996
		FI 962757 A	30-07-1996
		IN 182236 A1	13-02-1999
		IN 184399 A1	19-08-2000
		JP 8070451 A	12-03-1996
		JP 9507359 T	22-07-1997
		JP 9507361 T	22-07-1997
		JP 2002281412 A	27-09-2002
		JP 2002238004 A	23-08-2002
		JP 2002330366 A	15-11-2002
		PL 176128 B1	30-04-1999
		RU 2159015 C2	10-11-2000
		RU 2146855 C1	20-03-2000
		SG 92589 A1	19-11-2002
		SG 77534 A1	16-01-2001
		SG 66236 A1	20-07-1999

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

BT/IB2004/050040

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5867207	A		TR 28037 A	11-12-1995
US 6057886	A	02-05-2000	AT 193172 T	15-06-2000
			DE 69608416 D1	21-06-2000
			DE 69608416 T2	14-12-2000
			EP 0806113 A1	12-11-1997
			WO 9719553 A1	29-05-1997
			JP 10513333 T	15-12-1998
EP 1107600	A	13-06-2001	GB 2357922 A	04-07-2001
			EP 1107600 A1	13-06-2001
			JP 2001245272 A	07-09-2001
			US 2003191815 A1	09-10-2003
US 5594509	A	14-01-1997	AU 7114394 A	17-01-1995
			WO 9501058 A1	05-01-1995
EP 1365588	A	26-11-2003	FR 2838597 A1	17-10-2003
			EP 1365588 A1	26-11-2003
			JP 2004007538 A	08-01-2004
			US 2003221193 A1	27-11-2003
US 6263501	B1	17-07-2001	US 6002394 A	14-12-1999
			US 2003005445 A1	02-01-2003
			AU 7387196 A	28-04-1997
			BR 9611064 A	13-07-1999
			CA 2232003 A1	10-04-1997
			CA 2374730 A1	10-04-1997
			CN 1200221 A	25-11-1998
			EP 0880856 A1	02-12-1998
			JP 10512420 T	24-11-1998
			US 2002059599 A1	16-05-2002
			WO 9713368 A1	10-04-1997
			US 2002138840 A1	26-09-2002
			US 2003208758 A1	06-11-2003
			US 2003196201 A1	16-10-2003
			US 6388714 B1	14-05-2002
			US 6732369 B1	04-05-2004
			US 6323911 B1	27-11-2001
			US 6075575 A	13-06-2000
			US 2002019981 A1	14-02-2002
US 5652613	A	29-07-1997	AT 236487 T	15-04-2003
			AU 706701 B2	24-06-1999
			AU 6278896 A	30-12-1996
			BR 9609479 A	27-07-1999
			CA 2223025 A1	19-12-1996
			DE 69627201 D1	08-05-2003
			DE 69627201 T2	11-12-2003
			EP 0880855 A1	02-12-1998
			ES 2196159 T3	16-12-2003
			JP 2001526005 T	11-12-2001
			PL 328155 A1	18-01-1999
			WO 9641470 A1	19-12-1996